Supporting information for Moreno and Moriyón (2002) *Proc. Natl. Acad. Sci. USA* **99** (1), 1–3. (10.1073/pnas.022622699)

Table 2. *Brucella*-implicated virulence features at glance*

Structure/molecule	Role(s)	Origin of genes	Comments
Envelope molecules			
Lipopolysaccharide	Poor C' activation, resistance to bactericidal peptides, poor Mϕ activator, down-regulator of T cell activation	Orthologous (lipid A and core), horizontal transfer (O-chain)	Lipopolysaccharide core section is modified with respect to phylogenetic neighbors. Lipid A structure is regulated by BvrR/S
Omp3A (Omp25)	Unknown	Paralogous?	Omp25-defective mutants are attenuated and poor elicitors of tumor necrosis factor in cultured Mϕ. Regulated by BvrR/S
Ornithine lipids	May shield negatively charged groups in lipopolysaccharide, thus reducing affinity for bactericidal peptides	Orthologous	Role predicted on the basis of the structure of the molecules
Phosphatydilcholine	May lend additional stability to membranes	Orthologous	Role predicted on the basis of studies with model membranes and studies on other α-*Proteobacteria*
Long-chain fatty acids	May lend additional stability to membranes by increasing the hydrophobic effect	Orthologous	Role predicted on the basis of studies with model membranes
Periplasmic cyclic glucans	Critical for normal intracellular trafficking	Orthologous	They are not osmoregulated in *Brucella*; interact with host membranes, and sequester cholesterol
Periplasmic catalase	Protection from phagocyte-generated H_2O_2	Orthologous	Role predicted on the basis of *in vitro* studies
Secretion or transport systems			
Type IV (VirB operon)	Critical for intracellular trafficking	Orthologous	Homologous system is required for *A. tumefaciens* but there are significant differences in sequences.
BacA (putative)	Unknown		Homologous proteins are required for *S. meliloti* symbiosis
Sensory/Regulatory systems			
BvrR/S	Control of invasion and intracellular trafficking	Orthologous	Homologous system is required for *A tumefaciens* pathogenicity and *S. meliloti* symbiosis. Periplasmic section of sensor has evolved to sense unknown signals
Others			
Aromatic compound, cytochrome bd oxidase peptidoglycan, and purine biosynthesis	Affect basic biological functions	Orthologous	Affect viability in infection models but may not be true virulence factors

Structure/molecule	Role(s)	Origin of genes	Comments
Nutrient transport systems	Affect basic biological functions	Orthologous	Affect viability in infection models but may not be true virulence factors
Stress proteins	Affect basic biological functions	Orthologous	They are expressed during infection. In some cases, proved not to be essential in the natural host
Urease	May help to overcome the acid barrier of the stomach	Orthologous	Unproven role in intracellular parasitism; may be used to detoxify urea produced in the urea cycle by *Brucella*
Erythritol catabolic pathway	Useful to utilize a characteristic host sugar	Orthologous	Erythritol is used preferentially over glucose. The role in tropism for the placental tissues of ruminants is controversial
CcrM DNA methyltransferase and genes involved in transcriptional regulation	Affect basic biological functions	Orthologous	Although they have dramatic effects on bacterial viability in infection models, they are not true virulence factors

For details and references see ref. 1.

Reference:

1. Moreno, E. & Moriyón, I. (2001) in *The Prokaryotes: An Evolving Electronic Resource for the Microbiological Community*, eds. Dworkin, M., Falkow, S., Rosenberg, E., Schleifer, K. H. & Stackebrandt, E. (Springer, New York).